What is claimed is:

1. A method for continuous preparation of a well dispersed spherical hydrous zirconia particles with an average diameter(d_p) of 1~1,000 nm in the form of sol, which method comprises continuously supplying the aqueous solution of a zirconium salt at a concentration of 0.001~0.5 mole/ℓ to a reactor consisting of one or more than two reaction tubes at a temperature less than about 25 ℃, heating the said aqueous solution in the reactor(s) in a continuous flow state up to the boiling point or less, and then discharging the said solution through the outlet of the said reactor(s).

2. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein the said aqueous solution of a zirconium salt is heated to 70~100 ℃ in the reaction tube.

3. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein the said aqueous solution of a zirconium salt flows in the reaction tube having circular or annular concentric cross section.

4. A method for continuous preparation of a

hydrous zirconia sol according to Claim 1 wherein a solvent constituting the said aqueous solution of a zirconium salt is a mixture of water and at least one alcohol selected from a group consisting of ethyl alcohol, 1-propyl alcohol, 2-propyl alcohol and butyl alcohol; a mole ratio of the said alcohol/water mixture is 0.5~2.0; and a zirconium salt is selected from zirconium oxychloride, zirconium tetrachloride, zirconyl nitrate or zirconium sulfate.

5. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein the pH value of a hydrous zirconia sol is 5~12.

6. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein the average diameter(d_p) of the hydrous zirconia particles is about 10~250 nm.

7. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein the cross sectional shape of the reaction tube is circular or concentric annular form, and the value of D is 0.01~3 cm when a diameter of the said circle or an equivalent diameter corresponding to a concentric annular region is

"D."

8. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein a dispersant is added to the said aqueous solution of a zirconium salt at the concentration of 0.05~20 g/ℓ.

9. A method for continuous preparation of a hydrous zirconia sol according to Claim 1 wherein at least one compound as stabilizer selected from a group consisting of halide (chloride and bromide), carbonate and nitrate of Y, Ca, Ce or Mg is further added to the aqueous solution of a zirconium salt so that the amount of the finally prepared oxides (Y_2O_3, CeO_2, CaO or MgO) may be up to 30 mole % on the basis of ZrO_2.

10. A method for continuous preparation of a hydrous zirconia sol according to Claim 5 wherein at least one compound selected from a group consisting of urea ($CO(NH_2)_2$), cerium diammonium nitrate ($(NH_4)_2Ce(NO_3)_6$) and yttrium nitrate ($Y(NO_3)_3$) is added to the aqueous solution of a zirconium salt to control the pH value of the solution.

11. A method for continuous preparation of a hydrous

zirconia sol according to Claim 5 wherein an ammonia aqueous solution is added to the reaction output discharging from the reaction tube to control the pH value of the output.

12. A method for continuous preparation of a hydrous zirconia sol according to Claim 5 wherein a gas containing ammonia (NH_3) is contacted with the reaction output discharging from the reaction tube to control the pH value of the output.

13. A method for continuous preparation of a hydrous zirconia sol according to Claim 7 wherein the said dispersant is at least one selected from a group consisting of hydroxy-propyl methyl cellulose, hydroxy propyl cellulose, sodium oleate, potassium ethylxanthate, poly(acrylic acid), polyvinyl alcohol, polyoxyethylene nonionic surfactant, ethylene glycol, propylene glycol, 2-methyl-1,3-propanediol, glycerol, tartar acid, citric acid, malic acid and lactic acid.

14. A method for continuous preparation of a hydrous zirconia sol according to claim 7 wherein the solvent of the aqueous solution of a zirconium salt in the said reaction tube satisfies the following formula when

measuring at the temperature of 25℃:

$$\rho \cdot u \cdot D/\mu \leq 2,000$$

wherein, ρ represents the density(g/cm^3) of the solvent, μ the viscosity(g/cm·sec) of the solvent, u the average flow velocity(cm/sec) of the solvent, and D the diameter or the equivalent diameter of the cross section.

15. A method for continuous preparation of a hydrous zirconia sol according to Claim 3 wherein the reaction tube is a coil type.

16. A method for continuous preparation of a hydrous zirconia sol according to Claim 3 wherein the said reactor is partitioned into multiple heating zones.